International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Comparative Study of Lipid Profile in Vegetarian and Non-Vegetarian Individuals: Implications for Cardiovascular Disease Risk

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Abstract: ***Background**: Cardiovascular diseases (CVDs) are a leading cause of global mortality, with dietary patterns playing a significant role in modulating lipid profiles and associated risks. **Objective**: To compare the lipid profile parameters between vegetarian and non-vegetarian individuals and assess their implications for future CVD risk. **Methods**: A total of 100 healthy individuals aged 18–40 years were enrolled and categorized into two groups-vegetarians (n=50) and non-vegetarians (n=50). After 10–12 hours of fasting, blood samples were collected and analyzed using a fully automated biochemistry analyzer for lipid profile parameters: Total Cholesterol (TC), High-Density Lipoprotein (HDL), Low-Density Lipoprotein (LDL), Very Low-Density Lipoprotein (VLDL), and Triglycerides (TG). Statistical analysis was performed using SPSS v26. **Results**: The non-vegetarian group showed significantly higher levels of LDL (p=0.003) and TC (p=0.009) compared to vegetarians. HDL levels were marginally higher in vegetarians, but the difference was not statistically significant (p=0.478). Differences in VLDL (p=0.056) and TG (p=0.055) approached significance. **Conclusion**: The vegetarian group exhibited a more favorable lipid profile, suggesting a potentially lower risk for future cardiovascular events. These findings highlight the positive influence of vegetarian diets on cardiovascular health.***

Keywords: Lipid profile, vegetarian diet, non-vegetarian diet, cardiovascular disease, cholesterol, triglycerides

1. Introduction

Cardiovascular diseases (CVDs) are leading causes of death globally, often linked to dietary and lifestyle factors. Lipid profile testing serves as a predictive tool for CVDs, primarily by analyzing high-density lipoprotein (HDL) and low-density lipoprotein (LDL) levels in blood circulation. LDL is associated with cholesterol buildup in arteries, leading to atherosclerosis, while HDL facilitates reverse cholesterol transport, offering protective effects against heart disease [1, 2].

Vegetarian diets—rich in fruits, vegetables, whole grains, legumes, and nuts—have been reported to lower serum cholesterol and reduce CVD risk. Several studies indicate that vegetarians have better lipid profiles, including lower LDL and higher HDL levels, compared to non-vegetarians [3, 4]. In India, where around 35% of the population is vegetarian, the cultural and religious influences provide a unique context to explore this dietary impact [5].

The current study aims to examine and compare lipid profile variations among vegetarian and non-vegetarian individuals aged 18–40, focusing on their implications for future cardiovascular risks.

2. Materials and Methods

This cross-sectional study was conducted on 100 healthy individuals aged 18–40 years at Parul Sevashram Hospital, Vadodara. The participants were divided equally into vegetarian (n=50) and non-vegetarian (n=50) groups. Participants were instructed to fast for 10–12 hours before sample collection.4-5 ml of venous blood was drawn, and serum was separated using a centrifuge. Lipid profile analysis was performed using the ERBA EM360 fully automated clinical chemistry analyzer. LDL and VLDL were calculated using Friedewald's formula. Statistical significance was evaluated using an independent t-test (SPSS v26), and a p-value < 0.05 was considered significant.

3. Results

The analysis showed:

- LDL: significantly higher in non-vegetarians (91.77±16.96 mg/dL) vs vegetarians (79.37±21.46 mg/dL), p=0.003
- TC: significantly higher in non-vegetarians (158.20±3.22 mg/dL) vs vegetarians (144.20±27.38 mg/dL), p=0.009
- HDL: marginally higher in vegetarians (49.18±8.89 mg/dL) vs non-vegetarians (48.02±7.7 mg/dL), p=0.478
- TG and VLDL: differences not statistically significant (p=0.055 and 0.056 respectively), but showed higher trends in non-vegetarians

4. Discussion

This study reinforces the association between vegetarian diets and favorable lipid profiles. Consistent with previous findings [6–9], non-vegetarian individuals had higher LDL and TC levels, which are major contributors to CVD risk. The absence of significant differences in HDL levels suggests that other factors such as exercise and genetics may modulate HDL independent of diet [10]. The observed LDL elevation among non-vegetarians aligns with literature citing high saturated fat and cholesterol intake from animal products as contributors to atherogenesis [11, 12]. On the other hand, plant-based diets are rich in fiber and unsaturated fatty acids, which have lipid-lowering effects [13]. Limitations of this study include its small sample size and reliance on self-reported dietary data. Future

longitudinal and interventional studies with larger populations are warranted.

5. Conclusion

This study concludes that vegetarian diets are associated with a healthier lipid profile, which may translate into a lower risk of cardiovascular diseases in young adults. The findings emphasize the need for dietary modifications as part of preventive strategies against CVDs.

Acknowledgment
The author is grateful to Parul University, the Department of Paramedical and Health Sciences, and Parul Sevashram Hospital for their support. Special thanks to the **Munjal Sojitra**, study participants and supervising faculty Ms. Dhruvi Patel.

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